



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/758,540

01/16/2004

Anna Kron

13877/26501

5593

26646 7590 03/03/2008

KENYON & KENYON LLP
ONE BROADWAY
NEW YORK, NY 10004

EXAMINER

ZEMEL, IRINA SOPHIA

ART UNIT

PAPER NUMBER

1796

MAIL DATE

DELIVERY MODE

03/03/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/758,540	Applicant(s) KRON ET AL.	
	Examiner Irina S. Zemel	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 20 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no support anywhere in the specification to the polymer shell encapsulating a propellant and a reaction product of a monomer and an agent. While, the shell as discloses may possibly comprise the reaction product, there is no disclosure of the shell encapsulating this product. The relevant portions of the specification state that "The invention thus also concerns expandable thermoplastic microspheres comprising a thermoplastic polymer shell encapsulating a propellant and **further comprising** at least one non-polymeric reaction product of at least one monomer used for the polymer shell and an agent selected from the group consisting of oxo acids of sulfur, salts and derivatives thereof, comprising at least one sulfur atom having at least one free electron pair and binding three oxygen atoms." (Emphasis added). This portions of the disclosure clearly suggest that it is the microsphere that contains a non-reaction product, with no disclosure that this reaction product is being encapsulated within the shell. Since the water dispersion of microspheres is being

treated with the agent, it is believed that the reaction product as claimed is formed in the dispersion and in the polymer shell, and it does not appear to penetrate through the shell to react with possible acrylonitrile monomer encapsulated within the shell.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 4,287,308 to Nakayama et al., (hereinafter "Nakayama") in combination with US Patent 4,255,307 to Miller, (hereinafter "Miller").

The rejection of claims 1- 19 and 21 stands as per reasons of record.

Insofar as the newly added claims 22 and 23 claiming specific properties of the expandable microspheres, it is reasonable believed that those properties would have been inherently exhibited by the microspheres disclosed by Nakayama when the reducing agent of Nakayama is substituted with the reducing agent of Miller (for the reasons expressly discussed in several previous office actions), as obtained from substantially the same materials via substantially the same methods.

Insofar as the limitations of claim 20, it is believed they are not supported by the originally filed specification as discussed above. However, if the examiner is incorrect in the interpretation of the instant specification the applicants provide some explanation as to how the reaction product is encapsulated within the shell, the products of Nakayama must have reaction products of the reducing agent and acrylonitrile encapsulated within

the shell as being obtained by exactly the same process as the microspheres of the instant specification. The reaction product is different in Nakayama, however, once it is substituted with the agents of Miller for the reasons expressly discussed in the previous office actions, the reaction products would be the same as claimed.

The invention as claimed, thus, is still considered to have been obvious from the disclosure of the cited references.

Response to Arguments

Applicant's arguments filed 12-29-2007 have been fully considered but they are not persuasive. The applicants argue that there is no reason or motivation to combine the cited references, .e., Nakayama and Miller, since Nakayama teaches reduction of residual monomer in preparing expandable microspheres by cyanoethylation, while Miller teaches use of sulfites in reducing the amount of residual monomer in aqueous dispersion. The applicants state that "the properties and characteristics of the aqueous dispersions in Miller are very different from the expandable microspheres taught in Nakayama et al." Thus, there is no motivation to combine the teachings of those two references. The examiner strongly disagrees with the applicants position and narrow interpretation of the teachings of both references. Nakayama, indeed, teaches reduction of residual monomer in monomer in preparing expandable microspheres by cyanoethylation. It is, however, noted, that such reduction involves reaction of residual *acrylonitrile* monomer (which is exactly the same monomer the Miller reference is concerned with) from *polymeric* shell of the microsphere, while the polymeric

Art Unit: 1796

microsphere is dispersed in water. On the other hand, Miller, while teaching removing unreacted acrylonitrile monomer from water dispersion, also expressly states that along with unreacted monomers left in the dispersion, the residual acrylonitrile monomer from the polymer is also removed by the method disclosed in Miller (which uses the sulfite reducing agent). In summary, both references are concerned with very similar problem, i.e., reducing of the amount of residual monomer, i.e., acrylonitrile (same in both references), which is trapped in the polymers (same or very similar polymer in both instances). The difference is that the two references use different reducing agents to solve a VERY similar problem in a very similar way, i.e., reacting the same monomer trapped in the same polymer with a reducing agent. Not only use of an different agent that is tantamount to a simple substitution of one known element for another to obtain predictable results would have been clearly obvious for an ordinary artisan (See recent KSR decision), but in addition, there is a clear motivation to replace the agents of Nakayama with the agents of Miller in view of known and expected results such as avoiding the color and/or smell modification of the microspheres of Nakayama due to the color or smell associated with the reducing agents used by Nakayama.

The applicants further argue that the class of sulfur containing agents disclosed in Nakayama are clearly inferior to the preferred embodiments of alkylamines. This argument is not relevant, as first of all, the sulfur containing agents in Nakayama are sulfites, second of all, in fact, sulfur containing agent (sodium sulfide) is one of the preferred agents as per claim 5, for examples, along with alkanolamines, and in addition inferiority of one embodiment over the other expressly disclosed in the reference does

Art Unit: 1796

not have much to do with the obviousness to substitute reducing agent in even very preferred embodiments with another, which may be inferior for one purpose, but is superior for another. As discussed above, even if, one to assume that sulfites would be inferior to alkylamines base on the premises that another non-relates sulfur containing compounds is inferior, just because the sulfites disclosed in Miller are sulfur containing compound (which assumption has absolutely no chemical or logical basis), the motivation to use another known reducing agent in invention of Nakayama lies, for one, in the color or odor of the reducing agent. In addition, as per disclosure of Miller, the claimed silfites are known to be VERY effective compounds for reducing the amounts of residual acrylonitrile in both the suspension and the polymer. Thus, it is quite clear that at least for the reasons above, use of a known effective agents for reducing the amounts of acrylonirtile monomers in polymeric shells of Nakayama would have been obvious.

The applicants further argue that the claimed invention provides unexpected results insofar as the retention of expanding abilities and brightness as compared to the embodiments disclosed in Nakayama which use sodium sulfide. Insofar as the evidence of unexpected expanding abilities – there is none present on the record. Insofar as the unexpected brightness (or measurement of diffused BLUE reflectance factor at a specified wavelength of light), the results are not considered to be unexpected at all. It has been previously discussed that the comparative reagent (sodium sulfide) is of a dark red/brown color that is *expected* to adversely affect the bluesness characteristics of a polymer.

The arguments regarding claim 20 are not found persuasive either. Insofar as the prior art does not expressly disclose shell encapsulating a propellant and at least one non-polymeric reaction product of at least one monomer used for the polymer shell and an agent selected from the group consisting of oxo acids of sulfur, salts and derivatives thereof, as discussed above, no support for claiming such encapsulated mixture is found in the instant specification either. Claim 20 is only included in the art rejection to the extent that if the examiners interpretation of the specification is incorrect, and the reaction product is encapsulated by the shell, the presence of such product in the shell must be inherent once the microspheres of Nakayama are treated with the agents of Miller as obtained by exactly the same process. In addition, if the applicants intended to claim the polymeric shell that comprises such reaction product, the invention of claim 20 would also have been obvious over the combined teachings of Nakayama and Miller, since this reaction product will be inherently present in the polymer shell of Nakayama microspheres once they are treated with sulfite reducing agents of Miller (as the claimed compound it is the reaction product of the reducing agent and acrylonitrile monomer trapped in the polymeric shell).

It is noted that such or similar art rejection will be issued if the claims are amended to recite embodiments disclosed on page 7, lines 22-27, i.e., expandable thermoplastic microspheres comprising a thermoplastic polymer shell encapsulating a propellant and **further comprising** at least one non-polymeric reaction product of at least one monomer used for the polymer shell and an agent selected from the group consisting of oxo acids of sulfur, salts and derivatives thereof.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irina S. Zemel whose telephone number is (571)272-0577. The examiner can normally be reached on Monday-Friday 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571)272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1796

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Irina S. Zemel/
Primary Examiner, Art Unit 1796

Irina S. Zemel
Primary Examiner
Art Unit 1796

ISZ